

WHAT IS CLAIMED IS:

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1. A fastener for a reclosable bag, comprising:
a first track including a first profile; and
a second track including a second profile for interlocking with said first profile;
and
5 wherein said first and second tracks have a length defined by opposing ends,
said first track being laser-sealed to said second track at each of said
opposing ends.
 2. The fastener of claim 1, wherein said first and second tracks are laser-sealed by
material comprising said first and second track.
 3. The fastener of claim 1, wherein said first and second tracks are laser-sealed by
material comprising an additional component that is placed over said first and second
tracks.
 4. The fastener of claim 1, wherein only said first profile and said second profile
of said first and second tracks are laser-sealed.
 5. The fastener of claim 1, wherein all of said first track and said second track at
the said opposing ends are laser-sealed.
 6. A fastener for a plurality of reclosable bags, comprising:
a first track including a first profile; and
a second track including a second profile for interlocking with the first profile;
and
5 wherein said fastener is divided into segments associated with respective ones
of said plurality of recloseable bags, each segment having opposing
ends, the first profile being laser-sealed to said second profile at each of
said opposing ends.

7. The fastener of claim 6, wherein said first and second tracks are laser-sealed by material comprising said first and second tracks.

8. The fastener of claim 6, wherein said first and second profiles are laser-sealed by material comprising an additional component that is placed over said first and second tracks.

9. A method of generating end terminations along a fastener, comprising:
providing said fastener with first and second tracks, said first track including a first profile, said second track including a second profile for interlocking with said first profile; and
5 cutting said fastener with a laser beam to divide said fastener into segments associated with respective ones of the reclosable bags, each segment extending between opposing ends.

10. The method of claim 9, further including sealing said first profile to said second profile with said laser beam.

11. The method of claim 10, wherein said cutting and said sealing occur simultaneously.

12. A fastener for a reclosable bag, comprising:
a first track including a first profile;
a second track including a second profile for interlocking with said first profile,
said first and second tracks forming a notch; and
5 plastic material attached to said first and second tracks and initially covering said notch to seal said first and second profiles to each other on opposite sides of said notch, said plastic material being subsequently cut using a laser.

13. A method of creating a plurality of recloseable bags from a web of material, comprising:

providing said web of material including a fastener attached to said web, said fastener allowing said bags to be recloseable;

5 cutting said fastener at spaced locations corresponding to the ends of said plurality of recloseable bags; and

cutting said web of material with a laser adjacent to said spaced locations to form said plurality of recloseable bags.

14. The method of claim 13, wherein said step of cutting said fastener includes cutting with a laser.

15. The method of claim 14, wherein said step of cutting said fastener with said laser includes the step of simultaneously sealing said fastener.

16. The method of claim 15, wherein said laser for cutting said web is different from said laser cutting said fastener.

17. The method of claim 13, wherein said step of cutting said web includes the step of simultaneously sealing said web.

18. The method of claim 13, further including moving said web along a rotatable drum during said step of cutting said web.

19. The method of claim 18, wherein said step of cutting said web includes translating a laser beam from said laser.

20. The method of claim 19, wherein said step of translating is performed within said rotatable drum.

21. The method of claim 18, wherein said step of cutting said fastener includes cutting said fastener with a laser while said web is on said rotatable drum.

22. The method of claim 18, further including holding said web against said rotatable drum.

23. The method of claim 22, wherein said step of holding includes suctioning said web against said rotatable drum.

24. The method of claim 18, wherein said laser is located outside of an interior of said drum and a laser beam from said laser projects inwardly into said interior and then radially outward from said interior of said drum.

25. A method of creating a plurality of recloseable bags from a web of material, comprising:

providing said web of material including a fastener attached to said web;
operating a laser to seal said fastener at ends of said plurality of recloseable bags; and
operating said laser to seal side edges of said plurality of recloseable bags.

26. The method of claim 25, wherein said two operating steps occur simultaneously.

27. The method of claim 25, wherein said two operating steps also include cutting said fastener and cutting said web of material to form said side edges.

28. The method of claim 25, wherein said laser is a CO₂ laser.

29. The method of claim 25, wherein said web is moving on a rotating drum during said operating steps.

30. A method for cutting flexible material, comprising:
advancing said flexible material toward a rotatable drum;
engaging said rotatable drum with said flexible material;
holding said flexible material against said rotatable drum while said rotatable
drum is rotating; and
cutting said flexible material with a laser beam projecting from the interior of
said rotatable drum through slots in said rotatable drum.

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31. ~~The method of claim 30, wherein said flexible material is polymeric material.~~

32. The method of claim 31, wherein said polymeric material is a web of a material.

33. The method of claim 32, wherein said step of cutting produces individual bags.

34. The method of claim 30, wherein said step of holding includes suctioning said
flexible material against said rotatable drum.

35. The method of claim 30, further including the step of collecting segments of
said flexible material after said step of cutting.

36. The method of claim 30, wherein said step of cutting includes the step of
guiding said laser beam with a galvanometer-driven optic.

37. The method of claim 30, wherein said step of cutting includes the step of
guiding said laser beam with a steering mirror.

38. The method of claim 30, wherein said flexible material is generally non-opaque
to said laser beam and said cutting includes engaging opaque material on said flexible
material with said laser beam.

39. The method of claim 30, wherein said laser is a CO₂ laser.

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40. The method of cutting flexible material into segments, comprising:
suctioning said flexible material against a rotatable drum, said rotatable drum
including slots spaced apart by a distance corresponding to a length of
said segments; and
5 cutting said flexible material with a laser beam projected from an inside of said drum
into said slots.

41. The method of claim 40, wherein said segments remain suctioned against said
rotatable drum after said step of cutting.

42. The method of claim 40, wherein said cutting includes translating said laser
beam across said slots.

43. The method of claim 40, wherein said rotatable drum has a central axis and said
laser beam projects along a radial direction with respect to said central axis, said step
of cutting includes rotating said drum at a constant speed and initiating said laser beam
when one of said slots is aligned along said radial direction.

44. The method of claim 40, wherein said flexible material is a polymeric material.

45. The method of claim 44, wherein said polymeric material is a web of material.

46. The method of claim 45, wherein said segments are bags created from said web
of material.

47. The method of claim 40, wherein said step of cutting includes the step of
guiding said laser beam with a galvanometer-driven optic.

48. The method of claim 40, wherein said flexible material is generally non-opaque
to said laser beam and said cutting includes engaging opaque material on said flexible
material with said laser beam.

49. The method of claim 40, wherein said laser beam is from a CO₂ laser.

50. A method of cutting a flexible material into segments, comprising:
holding said flexible material relative to an outer surface of a drum having a plurality of slots extending from said outer surface to an inner surface of said rotatable drum;
developing a laser beam directed toward said inner surface; and
rotating said rotatable drum such that said laser beam sequentially passes through said plurality of slots to cut said flexible material and form said segments.
51. The method of claim 50, wherein said step of developing said laser beam occurs in a radial direction with respect to a central axis of said drum.
52. The method of claim 50, wherein said step of developing said laser beam includes projecting said laser beam only when said laser beam is aligned with one of said plurality of slots so as to result in an intermittent operation of said laser beam.
53. The method of claim 50, wherein said step of holding includes a step of suctioning said flexible material against said outer surface.
54. The method of claim 50, wherein said step of developing said laser beam includes the step of guiding said laser beam with a galvanometer-driven optic.
55. The method of claim 50, wherein said flexible material is generally non-opaque to said laser beam and said cutting includes engaging opaque material on said flexible material with said laser beam.
56. The method of claim 50, wherein said flexible material is a polymeric material.
57. The method of claim 56, wherein said polymeric material is a web of material.
58. The method of claim 57, wherein said segments are bags created from said web of material.

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59. The method of claim 50, wherein said laser beam is from a CO₂ laser.

60. A method of creating end terminations on a two-part fastener attached to a web of material for producing a plurality of bags, comprising:

holding said web of material relative to an outer surface of a rotatable drum
with said two-part fastener positioned a known location; and
fusing both parts of said two-part fastener with a laser beam.

61. The method of claim 60, wherein said step of holding includes suctioning said web of material against said outer surface.

62. The method of claim 60, wherein said step of fusing includes projecting said laser beam from an interior of said rotatable drum.

63. The method of claim 62, wherein said step of projecting includes guiding said laser beam through a slot in said rotatable drum.

64. The method of claim 60, wherein said fastener includes an end termination component at spaced locations along said fastener, said step of fusing includes fusing said material from said end terminations components to both parts of said two-part fastener.

65. The method of claim 60, wherein said step of fusing includes a step of guiding said laser beam with a galvanometer-driven optic.

66. The method of claim 60, further including holding a second web of material against a second drum and fusing a two-part fastener on said second web of material with a second laser beam, said laser beam for said second drum and said laser beam of said drum being derived from the same laser.

67. The method of claim 60, wherein said laser beam is from a CO₂ laser.

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68. The method of claim 60, wherein said holding included registering said two-part fastener within a circumferential groove in said drum.

69. The method of claim 60, further including cutting said fastener at said end termination.

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70. A machine for cutting flexible material into segments, comprising:
a generally cylindrical drum having an exterior surface for receiving said flexible material, said drum including a plurality of slots extending between an interior surface of said drum and said exterior surface, adjacent ones of said plurality of slots being spaced apart by a distance corresponding to a length of said segments; and
a laser for producing a laser beam that passes from an interior of said drum through said slots.

71. The machine of claim 70, wherein said flexible material is a polymeric material.

72. The method of claim 71, wherein said polymeric material is a web of material.

73. The method of claim 72, wherein said segments are bags created from said web of material.

74. The machine of claim 70, wherein said flexible material is a fastener to be used for a recloseable bag.

75. The machine of claim 74, wherein said laser provides end terminations for said fastener.

76. The machine of claim 75, wherein said end terminations are comprised of material of said fastener.

77. The machine of claim 75, wherein said end terminations are comprised of material of an additional component held on said fastener.

78. The machine of claim 74, wherein said drum includes a groove in which said fastener resides for registering the location of said fastener on said drum.

79. The machine of claim 70, further including a vacuum system for holding said flexible material on said drum.

80. A machine for cutting flexible material into segments, comprising:
a generally cylindrical drum having openings on an exterior surface;
a vacuum manifold cooperating with said openings for holding said flexible material relative to said exterior surface; and
5 a laser for producing a laser beam that contacts said flexible material while said flexible material is being held relative to said drum.

81. The machine of claim 80, wherein said flexible material is a polymeric material.

82. The machine of claim 81, wherein said polymeric material is a web of material.

83. The machine of claim 82, wherein said segments are bags created from said web of material.

84. The machine of claim 80, wherein said drum has a side surface, said vacuum manifold being located on said side surface.

85. The machine of claim 84, wherein said drum includes a plurality of drum manifolds leading to said openings, said vacuum manifold communicating with said plurality of drum manifolds.

86. The machine of claim 85, wherein said vacuum manifold remains stationary and said plurality of drum manifolds move relative to said vacuum manifold.

87. The machine of claim 86, wherein, at any given time, some of said plurality of drum manifolds are cooperating with said vacuum manifold and some of said plurality of drum manifolds are not cooperating with said vacuum manifold.

88. The machine of claim 87, wherein said laser is located on an interior of said drum and said laser beam projects outwardly through slots in said drum.

89. The machine of claim 80, wherein said drum rotates relative to said vacuum manifold.

90. The machine of claim 88, wherein said vacuum manifold is located along a side of said drum.

91. The machine of claim 80, wherein said flexible material is a fastener to be used for a recloseable bag.

92. The machine of claim 91, wherein said laser provides end terminations for said fastener.

93. The machine of claim 92, wherein said end terminations are comprised of material of said fastener.

94. The machine of claim 92, wherein said end terminations are comprised of material of an additional component held on said fastener.

95. The machine of claim 91, wherein said drum includes a groove in which said fastener resides for registering the location of said fastener on said drum.

96. The machine of claim 95, wherein said drum has slots that intersect said groove at spaced locations, said laser being located within said drum and said laser beam extending through said slots to act upon said fastener.

97. The machine of claim 91, wherein said laser fuses parts of said fastener together to form a seal.

98. The machine of claim 80, wherein said laser is located adjacent to said drum.

99. The machine of claim 98, wherein said laser beam extends into an interior of said drum and then projects radially outward by use of optics within said drum.

100. The machine of claim 80, wherein said laser is located within said drum.

101. A machine for processing flexible material, comprising:

a generally cylindrical drum having an exterior surface for receiving said flexible material, said drum including a plurality of slots extending between an interior surface of said drum and said exterior surface; and
5 a laser for producing a laser beam that passes from an interior of said drum through said slots and contacts said flexible material.

102. The machine of claim 101, wherein said laser beam is for cutting said material.

103. The machine of claim 101, wherein said laser beam is for welding said material.

104. The machine of claim 101, wherein said laser beam is for sealing said material.

105. The machine of claim 101, wherein said flexible material is a polymeric material.

106. The machine of claim 105, wherein said polymeric material is a web of material for creating individual bags.

107. The machine of claim 101, wherein said slots are straight.

108. The machine of claim 101, wherein said slots are curved.

109. The machine of claim 101, further including means for holding said flexible material on said drum.

110. The machine of claim 109, wherein said holding means is vacuum system.

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111. A fastener for a reclosable bags, comprising:

a first track including a first profile; and
a second track including a second profile for interlocking with the first profile;
and
wherein said first and second tracks are sealed through a non-contact sealing
mechanism to produce ends formed primarily by surface tension.

112. The fastener of claim 111, wherein said ends are substantially smooth.

113. The fastener of claim 112, wherein portions of said tracks adjacent to said ends
are substantially undisturbed by said non-contact sealing mechanism.

114. A fastener for a reclosable bags, comprising:

a first track including a first profile; and
a second track including a second profile for interlocking with the first profile;
and
wherein said first and second tracks are cut with a non-contact cutting
mechanism to produce ends formed primarily by surface tension.

115. The fastener of claim 114, wherein said ends are substantially smooth.

116. The fastener of claim 115, wherein portions of said tracks adjacent to said ends
are substantially undisturbed by said non-contact cutting mechanism.

117. A method of forming a fastener for a bag, comprising:

providing said fastener with first and second tracks, said first track including a
first profile, said second track including a second profile for interlocking
with said first profile; and
sealing ends of said first and second tracks without contacting said tracks with
the device that performs the sealing.

118. The method of claims 117, wherein said device is a laser.

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